

REMARKS

Applicant would like to thank Examiner Doan for the indication that claims 13, 14, and 17-21 are allowed and that claim 8 contains allowable subject matter. In response to the Final Office Action mailed June 29, 2005, Applicant submits the following remarks.

§ 102

The Patent Office rejected claims 1-3, 5-7, 9, 11, and 12 under 35 U.S.C. § 102(b) as being anticipated by Teraguchi (U.S. Patent No. 6,177,685). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 UPPQ 2d 1051, 1053 (Fed. Cir. 1987).

Regarding claim 1, Teraguchi fails to expressly or inherently disclose a sub-buffer layer deposited above the transitional layer and adapted to increase a source-drain breakdown voltage of the GaN transistor structure. The Patent Office maintains that "the sub-buffer (AlN) layer 2/32 would inherently have properties of adapted to increase a source-drain breakdown voltage of the GaN transistor structure because the sub-buffer layer 2/32 is made of AlN which is the same as the sub-buffer as claimed." The Patent Office went on to state that "if Applicant believes that the sub-buffer of AlN of the prior art cannot function as adapted to increase a source-drain breakdown voltage of the GaN transistor structure, then Applicant is requested to support that position with facts." In response, Applicant submits herewith a Rule 1.132 declaration of one of the inventors, Shawn Gibb. As evidenced by this declaration, the AlN layer of Teraguchi fails to increase the source-drain breakdown voltage of the transistor device. Therefore, since Teraguchi fails to expressly or inherently disclose a sub-buffer layer adapted to increase a source-drain breakdown voltage of a GaN transistor structure, claim 1 is allowable.

For at least the same reason claim 1 is allowable over Teraguchi, claims 2, 3, 5-7, 9, 11, and 12 are allowable. However, Applicant reserves the right to further address the rejection of claims 2, 3, 5-7, 9, 11, and 12 in the future if necessary.

§ 103(a) – Yu and Teraguchi

The Patent Office rejected claims 1-7 and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Yu (U.S. Patent No. 6,624,452) in view of Teraguchi (U.S. Patent No.

6,177,685). In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. According to MPEP 2143.03, “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.”

Regarding claim 1, the combination of Yu and Teraguchi fails to teach or suggest at least a sub-buffer layer deposited above the transitional layer and adapted to increase a source-drain breakdown voltage of the GaN transistor structure by preventing electrons from entering the transitional layer and the substrate during high voltage operation. As discussed above, Teraguchi fails to teach a sub-buffer layer adapted to increase a source-drain breakdown voltage of a GaN transistor structure. Yu fails to correct this deficiency. As admitted by the Patent Office, Yu fails to teach the claimed sub-buffer layer. As such, Yu also fails to teach or suggest the claimed sub-buffer layer that is adapted to increase a source-drain breakdown voltage of the GaN transistor structure. Since the combination of Yu and Teraguchi fails to teach or suggest at least a sub-buffer layer deposited above the transitional layer and adapted to increase a source-drain breakdown voltage of the GaN transistor structure, claim 1 is allowable over the combination of Yu and Teraguchi.

For at least the same reasons claim 1 is allowable over the combination of Yu and Teraguchi, claims 2-7 and 9-12 are also allowable. However, Applicant reserves the right to further address the rejections of claims 2-7 and 9-12 in the future if necessary.

§ 103(a) – Micovic and Teraguchi

The Patent Office rejected claims 1-7 and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Micovic (U.S. Publication No. 2003/0218183) in view of Teraguchi (U.S. Patent No. 6,177,685). In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. According to MPEP 2143.03, “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.”

Regarding claim 1, the combination of Micovic and Teraguchi fails to teach or suggest at least a sub-buffer layer deposited above the transitional layer and adapted to increase a source-drain breakdown voltage of the GaN transistor structure by preventing electrons from entering the transitional layer and the substrate during high voltage operation. As discussed above,

Teraguchi fails to teach a sub-buffer layer adapted to increase a source-drain breakdown voltage of a GaN transistor structure. Micovic fails to correct this deficiency. As admitted by the Patent Office, Micovic fails to teach the claimed sub-buffer layer. As such, Micovic also fails to teach or suggest the claimed sub-buffer layer that is adapted to increase a source-drain breakdown voltage of the GaN transistor structure. Since the combination of Micovic and Teraguchi fails to teach or suggest at least a sub-buffer layer deposited above the transitional layer and adapted to increase a source-drain breakdown voltage of the GaN transistor structure, claim 1 is allowable over the combination of Micovic and Teraguchi.

For at least the same reasons claim 1 is allowable over the combination of Micovic and Teraguchi, claims 2-7 and 9-12 are also allowable. However, Applicant reserves the right to further address the rejections of claims 2-7 and 9-12 in the future if necessary.

Conclusion

In view of the discussion above, claims 1-14 and 17-21 are allowable. Reconsideration is respectfully requested. If any issues remain, the examiner is encouraged to contact the undersigned attorney of record to expedite allowance and issue.

Respectfully submitted,
WITHROW & TERRANOVA, P.L.L.C.

By: 

Benjamin S. Withrow
Registration No. 40,876
P.O. Box 1287
Cary, NC 27512
Telephone: (919) 654-4520

Date: October 10, 2005
Attorney Docket: 2867-207

<p align="center">CERTIFICATE OF TRANSMISSION</p> <p>I HEREBY CERTIFY THAT THIS DOCUMENT IS BEING TRANSMITTED VIA FACSIMILE ON THE DATE INDICATED BELOW TO:</p> <p>Examiner: <u>Theresa T. Doan</u> Art Unit: <u>2814</u> Fax: <u>571-273-8300</u></p> <p><u>Kelly Farrow</u> Name of Sender</p> <p><u>[Signature]</u> Signature</p> <p><u>10/10/05</u> Date of Transmission</p>
